



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/099,698

03/13/2002

Regis Vaillant

14XZ00157

1979

7590

11/18/2003

General Electric Company
3135 Easton Turnpike - W3C
Fairfield, CT 06431

EXAMINER

BARBER, THERESE

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,698

Applicant(s)

VAILLANT ET AL.

Examiner

Therese Barber

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☒ Claim(s) 1,5,8,16,21 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 20-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 20, line 8, the meaning of the term "a just position" is not understood by the examiner. In addition, the terminology of "a just position" cannot found in the specification. The examiner notes that claims 21-33 are rejected by virtue of their dependency on claim 20.

Claim Objections

3. Claims 1, 5, 8, 16, 20, 21, and 33 are objected to because of the following informalities:

Regarding claim 1, lines 7 and 12, insert the phrase -- "the x-ray" -- before the term "source".

Regarding claims 5 and 8, the claims are identical and both claims are dependent on claim 1. Perhaps, claim 8 should depend from claim 4.

Regarding claim 16, lines 4, 8, and 13, insert the phrase -- "the x-ray" -- before the term "source".

Regarding claim 20, lines 8, 11, and 15, insert the phrase -- "the x-ray" -- before the term "source".

Art Unit: 2882

Regarding claim 21, line 3, insert the phrase -- "the x-ray" -- before the term "source".

Regarding claim 33, lines 3, 8, and 13, insert the phrase -- "the x-ray" -- before the term "source".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 16, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janssen (USPN 4,481,656) and Roehm (USPN 5,293,574).

6. Regarding claims 1, 16, and 33, Janssen discloses a radiography apparatus (fig. 1) comprising the means for providing an x-ray source (col. 4, line 50-52) and means for acquiring images (col. 4, line 50-54), the x-ray source and the image acquisition being mounted to rotate about at least one axis with respect to a support on which an object to be x-rayed is intended to be positioned (fig. 2). Janssen discloses that different images corresponding to different angular positions of the x-ray source can be acquired (col. 4, line 66 to col. 5, line 22; col. 5, lines 47-63). Janssen discloses that the magnification factor of the images is the function of the angular displacement of the x-ray source and the image acquisition (col. 4, line 66 to col. 5, line 22; col. 5, lines 47-63).

Art Unit: 2882

Janssen fails to disclose identifying at least one point of an x-rayed object on the image projections and determining the magnification as a function of the positions of the identified projections in the images.

Roehm discloses a radiography apparatus having the tracking means for identifying at least one point of an x-rayed object on image projections (col. 5, line 58 to col. 6, line 25) and determining the magnification of the positions of the identified projections in the images (col. 6, lines 44-57). Roehm discloses that tracking means of the radiography apparatus can be operated automatically and at real time in order to track an identified feature automatically from a sequence of x-ray images (col. 2, lines 10-22 and col. 5, line 57 to col. 6, line 36).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the radiography apparatus as disclosed by Janssen by incorporating the tracking means for identifying a point from an x-rayed object as disclosed by Roehm, in order, to track an identified feature automatically in a sequence of x-ray images in a radiography apparatus.

7. Claims 5, 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janssen, Roehm and Marks (USPN 5,233,639).

8. Regarding claims 5, 8, and 12, Janssen discloses a radiography apparatus (fig. 1) comprising the means for providing an x-ray source (col. 4, line 50-52) and means for acquiring images (col. 4, line 50-54), the x-ray source and the image acquisition being mounted to rotate about at least one axis with respect to a support on which an object to be x-rayed is intended to

Art Unit: 2882

be positioned (fig. 2). Janssen discloses that different images corresponding to different angular positions of the x-ray source can be acquired (col. 4, line 66 to col. 5, line 22; col. 5, lines 47-63). Janssen discloses that the magnification factor of the images is the function of the angular displacement of the x-ray source and the image acquisition (col. 4, line 66 to col. 5, line 22; col. 5, lines 47-63).

Janssen fails to disclose identifying at least one point of an x-rayed object on the image projections, determining the magnification as a function of the positions of the identified projections in the images and acquiring a plurality of images between the first and the second angular positions.

Roehm discloses a radiography apparatus having the tracking means for identifying at least one point of an x-rayed object on image projections (col. 5, line 58 to col. 6, line 25) and determining the magnification of the positions of the identified projections in the images (col. 6, lines 44-57). Roehm discloses that tracking means of the radiography apparatus can be operated automatically and at real time in order to track an identified feature automatically from a sequence of x-ray images (col. 2, lines 10-22 and col. 5, line 57 to col. 6, line 36).

Marks discloses a radiographic apparatus wherein images are obtained by moving the x-ray source at a constant angular velocity around the subject, thereby assuring that the sequential images are separated by an equal time interval equal to the reciprocal of the frame rate and by an equal angular displacement equal to the angular velocity divided by the frame rate. Thus, if the acquisition rate is 60 frames per second and the angular velocity is 6 degrees per second, each image is separated by 0.1 degree of arc and $1/60^{\text{th}}$ second of time from the preceding and

Art Unit: 2882

following images. Thus, image pairs with a fixed degree of angular displacement can be obtained by selecting images separated by a fixed number of frames (col. 10, lines 1-14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the radiography apparatus as disclosed by Janssen by incorporating the acquisition rate as disclosed by Marks and the tracking means for identifying a point from an x-rayed object as disclosed by Roehm, in order, to track an identified feature automatically in a sequence of x-ray images while reducing the amount of x-ray exposure.

Allowable Subject Matter

8 Claims 2-5, 6-7, 9-11, 13-14, and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Regarding claims 2-5, 6-7, 9-11, 13-14, and 17-19, the claims would be allowable over the prior art of record if rewritten because the prior art fails to disclose or reasonably suggest a radiographic apparatus and the method for determining a magnification factor is defined by identifying at least one point of the x-rayed object as the function of the angular displacement between the x-ray source and the image acquisition by acquiring angular positions of at least two images wherein the images are separated by angles that are greater than 15° (claim 2) and greater than 20° (claim 3), as claimed.

10. Claims 20-33 would be allowable if rewritten or amended to overcome the rejection(s)

Art Unit: 2882

under 35 U.S.C. 112, second paragraph, set forth in this Office action.

11. Regarding claims 20-33, the claims would be allowable over the prior art if rewritten because the prior art fails to disclose or reasonably suggest the method of determining a magnification factor of an object in a radiographic image by calculating the spatial projection of a point of in the object by providing two projections from two different angles and calculating the distance from the x-ray source to the object based on the calculated spatial position; thereby, determining the magnification factor of the object, as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (703) 306-0205. The examiner can normally be reached on Monday to Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4857 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

tb
November 17, 2003


EDWARD GLICK
SUPERVISORY PATENT EXAMINER